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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/963,359	09/25/2001	Zhaomiao Tang	A-70915/DJB/VEJ	8253

7590

10/20/2005

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EXAMINER
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SIMITOSKI, MICHAEL J

ART UNIT	PAPER NUMBER
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2134

DATE MAILED: 10/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/963,359

Applicant(s)

TANG, ZHAOMIAO

Examiner

Michael J. Simitoski

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 July 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3-11 and 13-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-11 and 13-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 September 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. The response of 7/29/2005 was received and considered.
2. Claims 1, 3-11 & 13-22 are pending.

### ***Response to Arguments***

3. Applicant's arguments with respect to claims 1, 3-11 & 13-22 have been considered but are moot in view of the new ground(s) of rejection. However, a description of the newly-applied art is provided. Further, in light of Applicant's amendments to the claims, the rejections under 35 U.S.C. §112 and objections to the claims, set forth in the previous Office Action, are withdrawn.

4. The Schnurer reference discloses a method of determining if an object is infected with a virus by activating the target object (col. 7, lines 39-43) in a virtual environment (which contains essentially many objects that would be contained within a normal computer, such as files, databases, computer code, etc.). The effects of the virus are analyzed to determine by comparing the original objects/bait to standard samples (infected bait objects). However, Schnurer lacks explicitly using the information learned for cleaning the infected object. Chess teaches comparing original files to potentially virus-infected files to determine a difference (¶2-6) and, for example, if a file had no macros contained within it during the previous check (as indicated by the database), the macro will be removed (¶32). While Chess is not activating potentially infected files explicitly, Chess is using the differences in the original data and the new/infected data to restore the infected data to its original state, thereby reversing the effect of a virus, allowing the system to clean unknown viruses (¶¶ 2, 6, 25-27 & 32). Therefore, it would have been obvious to modify Schnurer to use the knowledge gained from executing the potential

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viruses in the virtual environment to then clean the infected file. One of ordinary skill in the art would have been motivated to perform such a modification to repair a file infected by an unknown virus, as taught by Chess (¶¶ 2, 6, 25-27 & 32).

### ***Claim Objections***

5. Claim 18 is objected to because of the following informalities: The dependency should be changed to claim 11. Appropriate correction is required.

### ***Specification***

6. The disclosure is objected to because of the following informalities: The specification contains numerous grammatical informalities. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

For example, on p. 16, "knowledge real-time learned", "and a virus's nature lies in the ability of camouflaging themselves" and "the virus will restores the host object" are minor grammatical informalities.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1, 3-11 & 13-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1 & 11, it is unclear whether the computer viruses reside on “a computer” or on “a virtual computer circumstance”. *For the purposes of this Office Action, the computer viruses are understood to reside on the virtual computer circumstance.*

Regarding claims 1 & 11, it is unclear how it can be determined whether the target object contains a virus or not when viruses are already resident on the system. *For the purposes of this Office Action, the Examiner assumes that the limitation “on which the computer viruses reside” (lines 3-4) means “on which the computer viruses will reside” or similar.*

Regarding claims 1 & 11, it is unclear whether “a plurality of objects or baits to be infected” or “computer viruses” induces the virus infection. *For the purposes of this Office Action, the computer viruses are understood to induce virus infection.*

Regarding claims 1 & 11, it is unclear how “changes between the standard samples before infection and after infection” (lines 16-17 and lines 21-22) can occur because the generated samples are (1) generated after infection and (2) always infected.

Regarding claims 8 & 18, the limitation “the infected host object” lacks antecedent basis in the claims.

Regarding claims 7 & 17, the claims contain the trademark/trade names DOS, WINDOWS and UNIX. Where a trademark or trade name is used in a claim as a limitation to identify or describe a particular material or product, the claim does not comply with the requirements of 35 U.S.C. 112, second paragraph. See *Ex parte Simpson*, 218 USPQ 1020 (Bd.

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App. 1982). The claim scope is uncertain since the trademark or trade name cannot be used properly to identify any particular material or product. A trademark or trade name is used to identify a source of goods, and not the goods themselves. Thus, a trademark or trade name does not identify or describe the goods associated with the trademark or trade name. In the present case, the trademark/trade name is used to identify/describe different brands of operating systems and, accordingly, the identification/description is indefinite.

Regarding claims 9-10 & 19-20, the limitation “necessary system files” is unclear because (1) a peripheral storage does not require any system files and (2) what files may be “necessary” for one computing environment may not be necessary for another, therefore rendering the claim indefinite.

Regarding claims 8 & 18, the phrase “i.e.” renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Regarding claims 8 & 18, the limitation “the virus is virtually ran to restore the original object” is unclear because the specification discloses the virus-cleaning program cleaning the infected object using information learned from running the virus. As the claim suggests that the virus cleans the infected object, the claim is unclear. *For the purposes of this Office Action, it is understood that the virus-cleaning program cleaning the infected object using information learned from running the virus.*

Regarding claims 21-22, it is understood that “a computer readable recording medium” and a “transmission medium” cannot “cause a computer to execute ... steps” therefore the claim is indefinite. However, “a computer readable recording medium containing instructions for

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causing ...” (claim 21) and a “transmission medium containing instructions for causing ...” (claim 22) would be definite in this respect; however, “transmission medium” is not defined in the specification. While computer readable recording mediums (such as floppy disks) are well known in the art (as recited in claim 21), a transmission medium containing instructions (as recited in claim 22) is indefinite.

### ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1, 8, 11, 18, 21 & 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,842,002 to Schnurer et al. (**Schnurer**), in view of U.S. Patent Application Publication 2002/0073055 to **Chess**.

Regarding claims 1, 11, 21 & 22, Schnurer discloses simulating in a computer a virtual computer circumstance/trapping device (col. 5, lines 7-10 & col. 6, lines 64-67) on which the computer viruses reside, providing a plurality of objects or baits/files to be infected by computer viruses that induce virus infection (col. 7, lines 39-43), loading a target object/data stream (col. 6, line 64 – col. 7, line 11 & col. 7, lines 25-52) to be scanned into said simulated virtual computer circumstance/trapping device, activating/executing the target object/virus to be scanned in said simulated virtual computer circumstance/trapping device to induce the computer viruses possibly attached on said target object to infect the plurality of objects to be infected/files and generating

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standard samples/infected files which have been infected (col. 7, lines 47-52), comparing the plurality of objects/files after processing in the activating/executing step with the plurality of objects/files to be infected originally provided, determining whether there is any change (CRC check) or not; if there is a change, the target object to be scanned contains virus, otherwise the target object to be scanned is free of viruses (col. 7, lines 39-52). Schnurer lacks analyzing and learning from and cleaning the viruses. However, Chess teaches that to detect and remove previously unknown viruses (§2), a system is designed to maintain a database of information associated with documents (§6) and scanning documents to detect changes from those characteristics recorded in the database (§25-27) and restoring the changed documents to their original condition or to a functionally equivalent state (§32), by for example removing all macros from a document which previously contained none (§32). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Schnurer to analyze and learn from the viruses by analyzing the generated standard samples (infected files) and extracting information and knowledge on the viruses (changes) indicated by changes between the standard samples before infection (as is kept in Chess's database) and after infection (as in Chess's scanned documents) when it is determined that said target object to be scanned contains a virus and to clean from the infected target object the virus's body (as in Chess's macro) and modifying key information which has been changed by said virus (restoring to functionally equivalent state) indicated by changes between the standard samples before infection and after infection and on the basis of the modification that the viruses have made to said infected files. One of ordinary skill in the art would have been motivated to perform such a



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modification to repair files infected with unknown viruses, as taught by Chess (¶¶ 2, 6, 25-27 & 32).

Regarding claims 8 & 18, Schnurer, as modified above, teaches virtually running the virus (col. 6, line 64 – col. 7, line 11 & col. 7, lines 25-52) and restoring the original target object from the infected host object (Chess ¶¶ 2, 6, 25-27 & 32).

11. Claims 3-4 & 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Schnurer** and **Chess**, as applied to claims 1 & 11 above, in further view of Connectix Virtual PC software by **Connectix**, Described in “Connectix Virtual PC” datasheet (VPC) and “Connectix Virtual PC Family Frequently Asked Questions” (FAQ).

Regarding claims 3 & 13, Schnurer, as modified above, is silent regarding details of the emulation. However, Connectix teaches simulating a Central Processing Unit (CPU)/Pentium chip (VPC, p. 1, ¶2), simulating an Operating System (OS)/PC-based operating system (VPC, p. 1, ¶1 & ¶3), and simulating peripheral storage devices by simulating storage space and structures of various peripheral storage devices/CD-ROM and PC disk/floppy disk (VPC, p. 2, ¶3). Virtual PC is used to run applications for one platform (such as Windows) on another platform (such as Macintosh). Further, FAQ teaches that Virtual PC simulates both a hard disk and memory for the emulated software, in this case, Windows (FAQ, p. 9, ¶7). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to simulate a CPU, OS, storage device and memory. One of ordinary skill in the art would have been motivated to perform such a modification to run Windows from within a Macintosh, as taught by Connectix (VPC, p. 1, ¶1-3, p. 2, ¶3 & FAQ, p. 9, ¶7).

Regarding claims 4 & 14, Schnurer discloses multiple baits of different sizes and contents (FAT, executables) (col. 8, lines 13-20).

12. Claims 5-7 & 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Schnurer, Chess and Connectix**, as applied to claims 4 & 14 above, in further view of U.S. Patent 6,067,410 to **Nachenberg**.

Regarding claims 5 & 15, Schnurer discloses multiple baits of different sizes and contents (FAT, executables) (col. 8, lines 13-20), but lacks specifically a specific virus. However, Nachenberg teaches that the bulk of software viruses in DOS based systems are COM files. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include DOS COM bait files. One of ordinary skill in the art would have been motivated to perform such a modification to include as bait commonly infected files, as taught by Nachenberg (col. 8, lines 13-20).

Regarding claims 6 & 16, Schnurer discloses simulating the system time to generate virtual system date and time for inducing the viruses that are sensitive to date and time (col. 7, lines 33-35).

Regarding claims 7 & 17, Schnurer, as modified above, discloses simulating WINDOWS (Connectix VPC document, p. 1, ¶3).

13. Claims 9-10 & 19-20, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over **Schnurer, Chess and Connectix**, as applied to claims 3 & 13 above, in further view of U.S. Patent 5,537,636 to Uchida et al. (**Uchida**), U.S. Patent 6,356,915 to Chetkine et

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al. (**Chtchetkine**) & U.S. Patent 6,192,456 to Lin et al. (**Lin**). Schnurer as modified above, discloses system files and bait files for inducing viruses (Schnurer col. 6, line 64 – col. 7, line 11 & col. 7, lines 25-52) and teaches that VPC is software emulation of the hardware on a PC (Connectix FAQ, p. 9, ¶6-7), but lacks explicit disclosure of sectors, tracks, cylinders, a primary boot sector and corresponding blank sector of the No. 0 track, next boot sector, File Allocation Table, root directory sector. However, Uchida teaches that disks contain cylinders, tracks and sectors (col. 6, line 61 – col. 7, line 65), a primary boot sector (col. 8, lines 13-15) and corresponding blank sector of the number 0 track (col. 8, lines 28-32), and a File Allocation Table (col. 5, lines 46-50). Further, Chtchetkine teaches that the logical structure on the FAT file system requires a boot sector that describes the root directory sectors within the disk (col. 2, lines 22-27). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to assign memory to simulate a virtual hard disk including a space by sector number, track number and cylinder number, a primary boot sector and corresponding blank sector of the No. 1 track, File Allocation table and root directory sector. One of ordinary skill in the art would have been motivated to perform such a modification to simulate in software the hardware (hard disk, floppy disk) of a PC, as taught by Connectix (Connectix FAQ, p. 9, ¶6-7), Uchida (col. 5, lines 46-50, col. 6, line 61 – col. 7, line 65, col. 8, lines 13-15 & col. 8, lines 28-32) and Chtchetkine (col. 2, lines 22-27). As modified, Schnurer lacks a next boot sector. However, Lin teaches that storing multiple partitions requires multiple boot sectors (Fig. 3 & col. 4, lines 52-54). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include a next boot sector. One of ordinary skill in the art

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would have been motivated to perform such a modification to use multiple partitions, as taught by Lin (Fig. 3 & col. 4, lines 52-54).

### *Conclusion*

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Simitoski whose telephone number is (571) 272-3841. The examiner can normally be reached on Monday - Thursday, 6:45 a.m. - 4:15 p.m.. The examiner can also be reached on alternate Fridays from 6:45 a.m. - 3:15 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Morse can be reached at (571) 272-3838.

**Any response to this action should be mailed to:**  
Commissioner for Patents

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P.O. Box 1450  
Alexandria, VA 22313-1450

**Or faxed to:**

(571) 273-8300  
(for formal communications intended for entry)

**Or:**

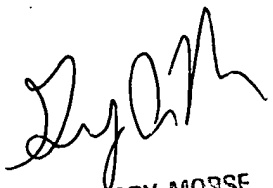
(571) 273-3841 (Examiner's fax, for informal or draft communications, please label "PROPOSED" or "DRAFT")

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
MJS

September 22, 2005

  
GREGORY MORSE  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER